REMARKS/ARGUMENTS

In this amendment, claims 1, 14, and 26 are amended. No claims are canceled or amended. Thus, claims 1-32 remain pending.

Rejection under 35 U.S.C. § 103(a), Bosshart and Lee

Claims 1, 5, 8-12, 14, 18, 21-26, and 28-32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bosshart (US Pat. 4,754,421) in view of Lee (US Pat.

Claims 1-13

Claim 1 is allowable over the cited references, either alone or in combination, as those references fail to teach or suggest all the elements of claim 1. For example, claim 1 recites:

> *A multiplication unit, comprising a 2N-bit multiplier and having a first short word length multiplication mode and a second long word length multiplication mode, wherein a short word length is N and a long word length is 2N, wherein N is an integer, and wherein:*
>
> *in the first mode for multiplying two N-bit numbers, a first long word length multiplicand is formed from a first short word length multiplicand, a second long word length multiplicand is formed from a second short word length multiplicand, and the first and second long word length multiplicands are multiplied together using the 2N-bit multiplier to form a result which includes the product of the first and second short word length multiplicands, and*
>
> *in the second mode for multiplying two 2N-bit numbers, wherein a third long word length multiplicand is formed from a first pair of short word length words and a fourth long word length multiplicand is formed from a second pair of short word length words, first words of the first and second pairs of short word length words are stored in respective registers connected to the 2N-bit multiplier, and subsequently the third and fourth long word length multiplicands are multiplied together using the 2N-bit multiplier.*

At paragraph 6, the Office Action asserts that Bosshart teaches the first mode. In Bosshart, one 16-bit multiplier 12 is used to multiply two 32-bit words X and Y. To perform the multiplication, 4 operations are needed. *See Bosshart*, col. 3lines 16-17. The operations are the different combinations of the LSB and the MSB of each word X and Y. *Id.*, Table I and II at col. 3 lines 27-42. As there are four combinations, there are four multiplications by the 16-bit multiplier 12. *Id.*, col. 6 lines 17-40. Thus, the multiplier 12 is effectively a N/2-bit multiplier in

that it multiplies numbers that are half of the size N of the words to be multiplied. In contrast, claim 1 recites that the first mode multiplies two N-bit number using a 2N-bit multiplier.

At paragraph 7, the Office Action asserts that Lee teaches the second mode. In the conventional circuit of Lee, word multiplication is performed using multiple (4) N-bit multipliers in an efficient manner. *See Lee*, FIG. 1 col. 1 lines 38-63. The invention of Lee is directed to a simplified circuit that performs the same actions more efficiently. *Id.*, col. 2 lines 59-63. Fig. 2 still shows multiple multipliers, each of which are less than 2N-bit, such as encoders 210, 212 and partial product generating unit 213. In contrast, claim 1 recites that the first mode multiplies two 2N-bit number using a 2N-bit multiplier. Furthermore, Lee does not show any registers connected to any of these multipliers.

For at least the reasons stated above, Applicant submits that claim 1 and its dependent claims 2-13 are allowable over the cited references.

Claims 14-32

Applicants submit that independent claims 14 and 26 should be allowable for at least this same rationale. Claims 15-25 depend from claim 14; and claims 27-32 depend from claim 26 and thus derive patentability at least therefrom.

Other rejections under 35 U.S.C. § 103(a)

Claims 2-4, 13, and 15-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bosshart in view of Lee as applied to claim 1 above, and further in view of Yu et al. (hereafter Yu)(US Pat. 6,523,055). Claims 6, 7, 19, 20, and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bosshart and Lee as applied to claim 1 above, and further in view of Henderson et al. (hereafter Henderson)(US Pat. 6,484,194).

These claims derive patentability from their respective independent claims, which area allowable described above. The cited teachings of Yu and Henderson fail to make up for the deficiencies in Bosshart and Lee.

CONCLUSION

In view of the foregoing, Applicants believe all claims now pending in this Application are in condition for allowance. The issuance of a formal Notice of Allowance at an early date is respectfully requested.

If the Examiner believes a telephone conference would expedite prosecution of this application, please telephone the undersigned at 415-576-0200.

Respectfully submitted,

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